Hands-on with LEAP

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Saturday

- Data input and modeling in LEAP:
- Direct data input: constants
- Expressions: mining GDP – constant – growth rate - interpolation

- Expressions: planning reserve margin power sector
- Step(1999,0, 2002,20)

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- Exercise: Mining electricity intensity
- - constant 2000- 2010 - double from 2010
- - GDP-mining 10% growth annually

- What is the composition of mining energy consumption in current accounts ?

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- Exercise: Power sector
- Change planning reserve margin to 15%
- What is the hydropower share of capacity in 2010 ?
- Export exogenous capacities to excel and make a graph of hydropower capacity
- - why is this correct without running the model?

Interpretation of Reference Scenario

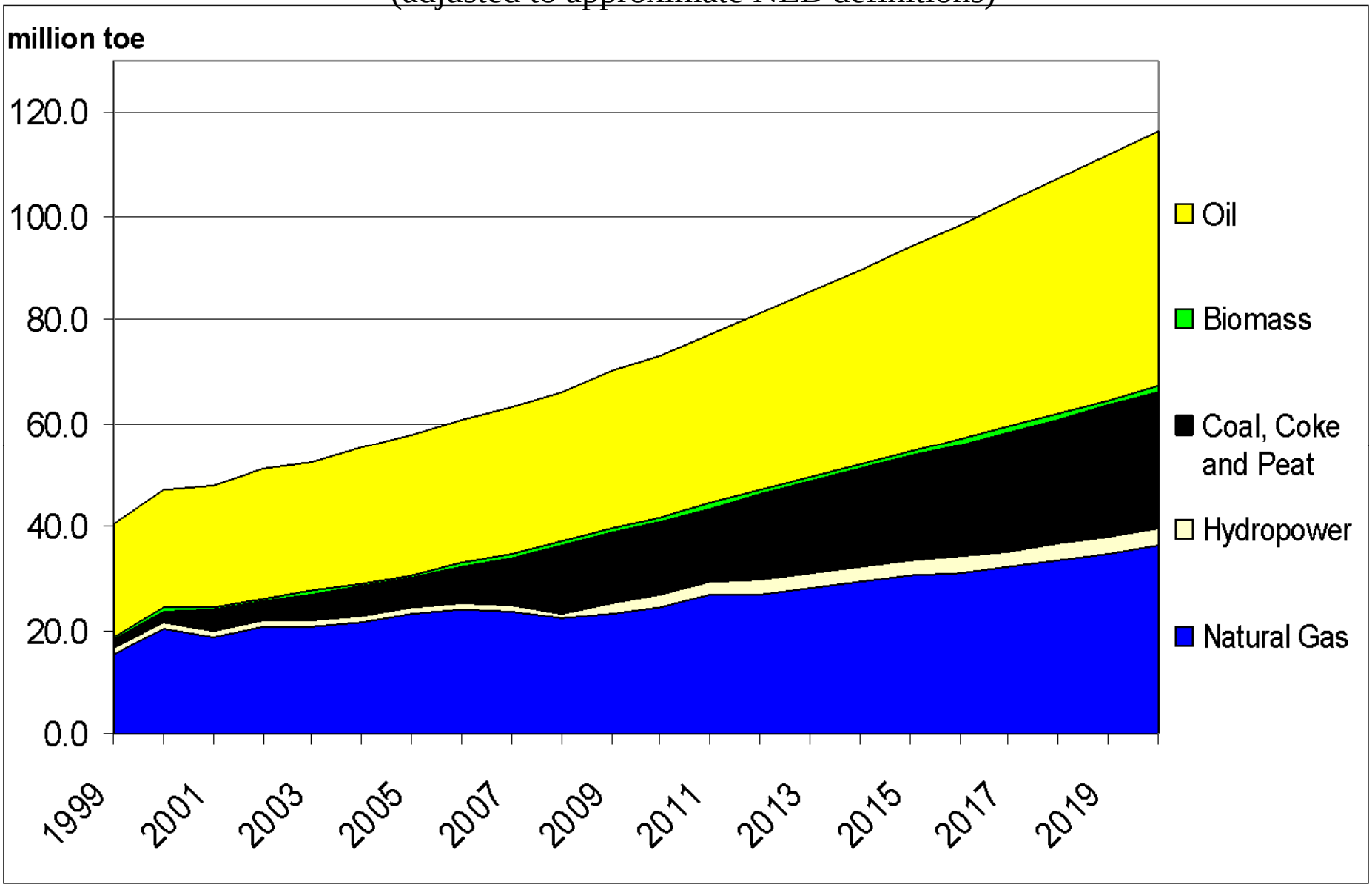
- Reference scenario – business as usual (BAU) – forecast - projection?
- Focus on long term with historical data to 2003
- Energy scenario – not cost minimisation or cost calculation
- Energy demand – conversion and extraction

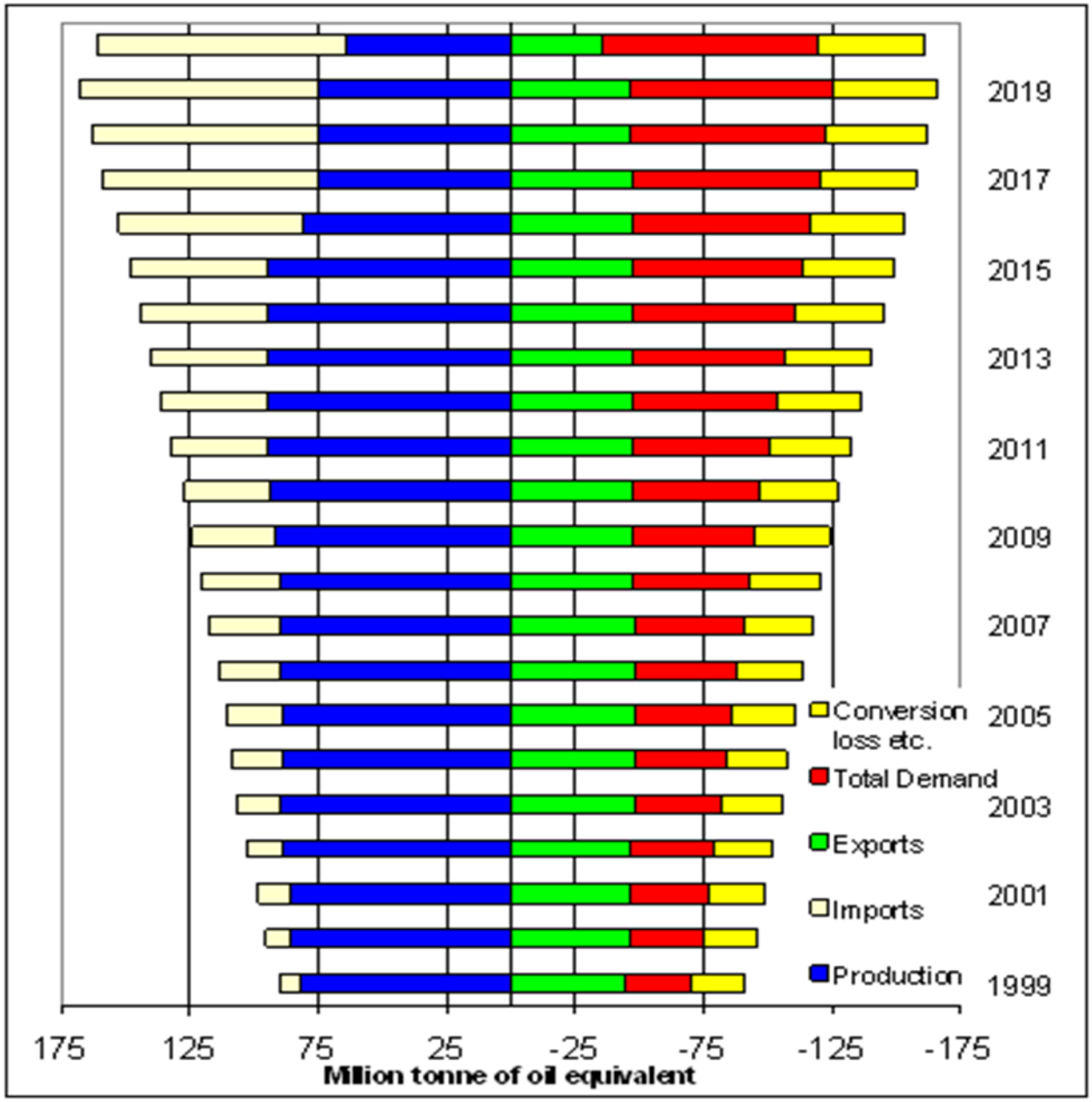
Reference Scenario Assumptions

- Drivers
- GDP – intensities
- Shares
- Expansion plans and ressource variabels

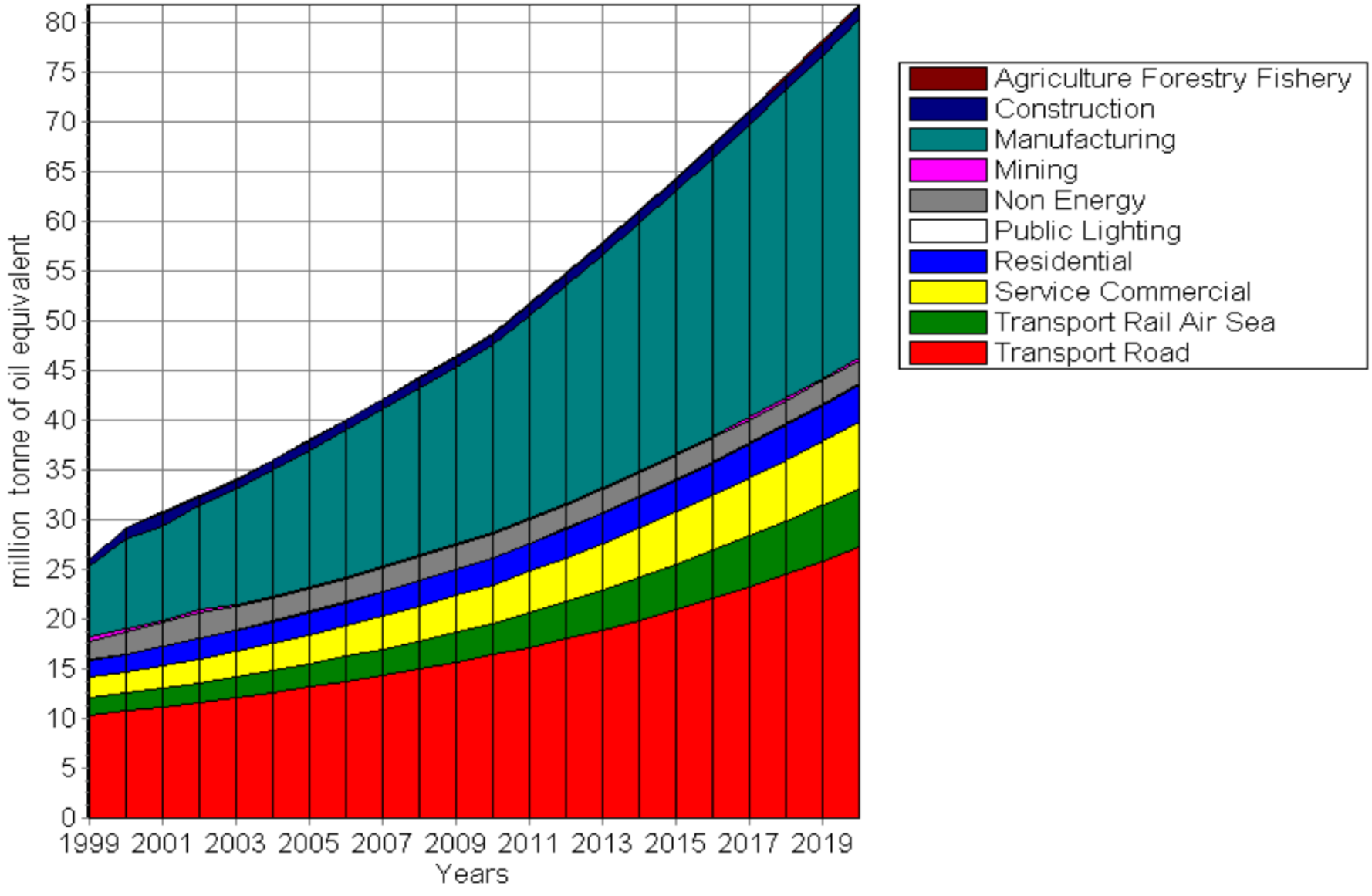
Primary energy supply: Reference scenario

(adjusted to approximate NEB definitions)

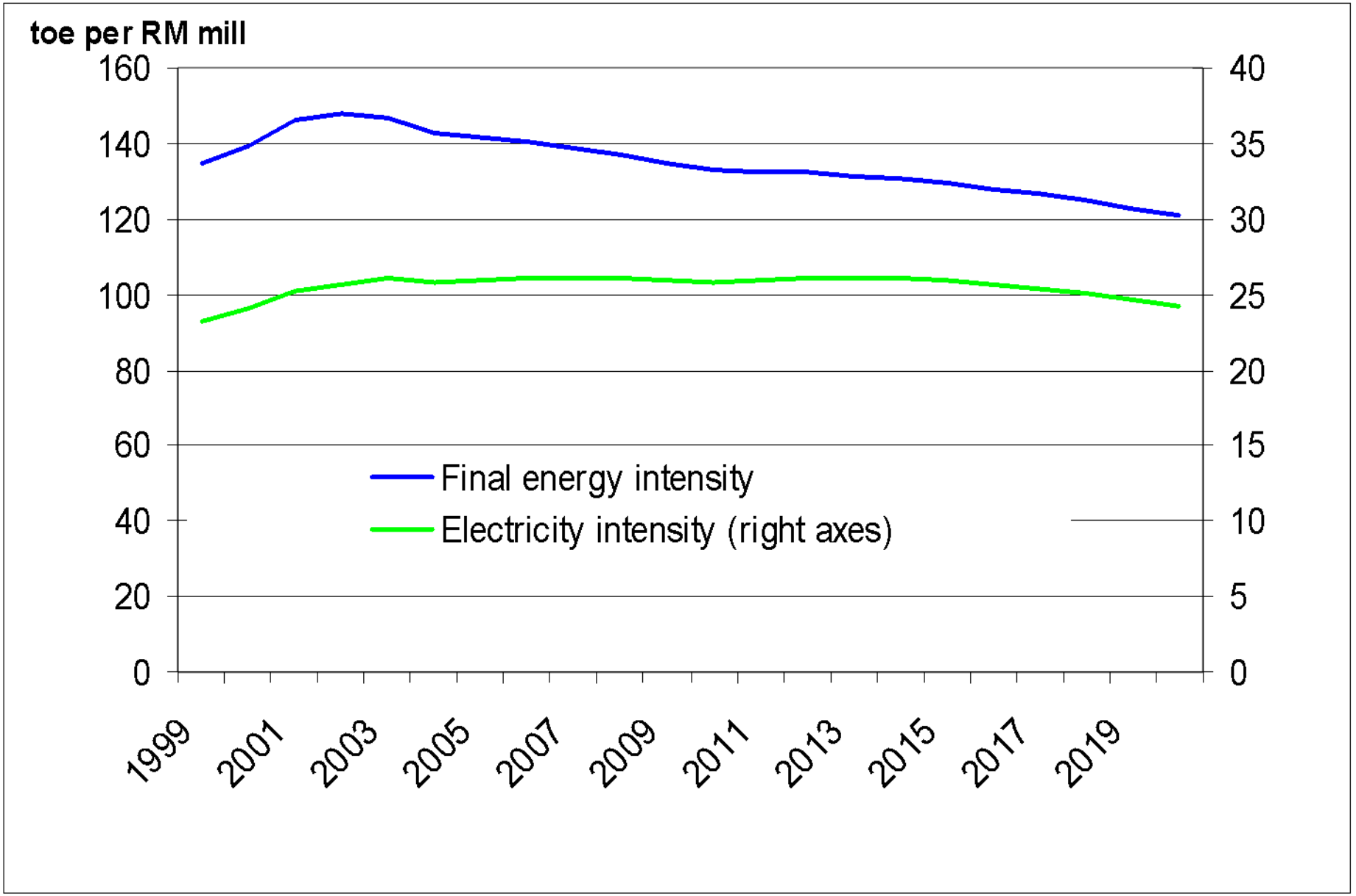



2019
2017
2015
2013
2011
2009
2007
2005
2003
2001
1999
Conversion loss etc.
Total Demand
Exports
Imports
Production
175
125
75
25
-25
-75
-125
-175
Million tonne of oil equivalent

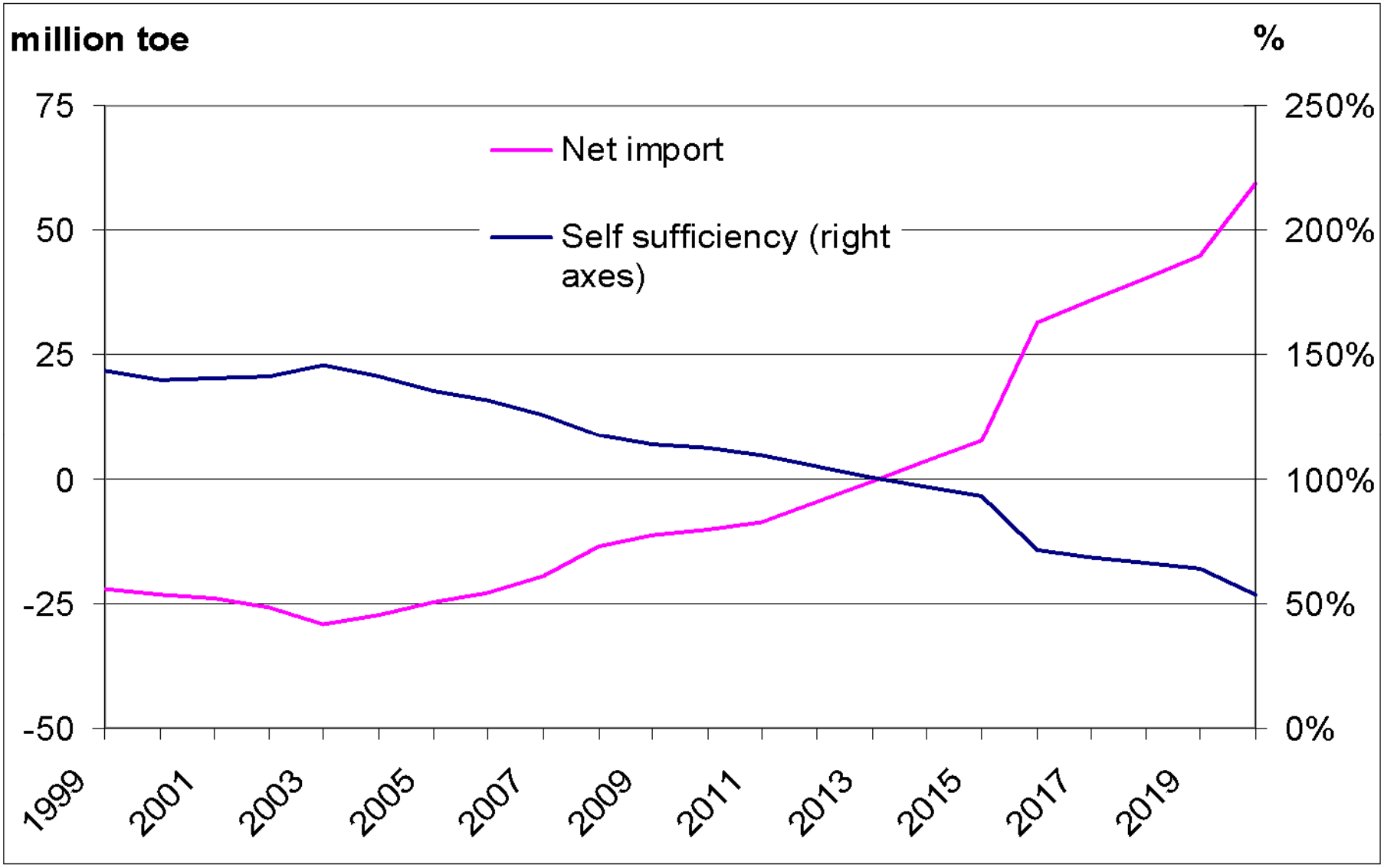
Final energy demand



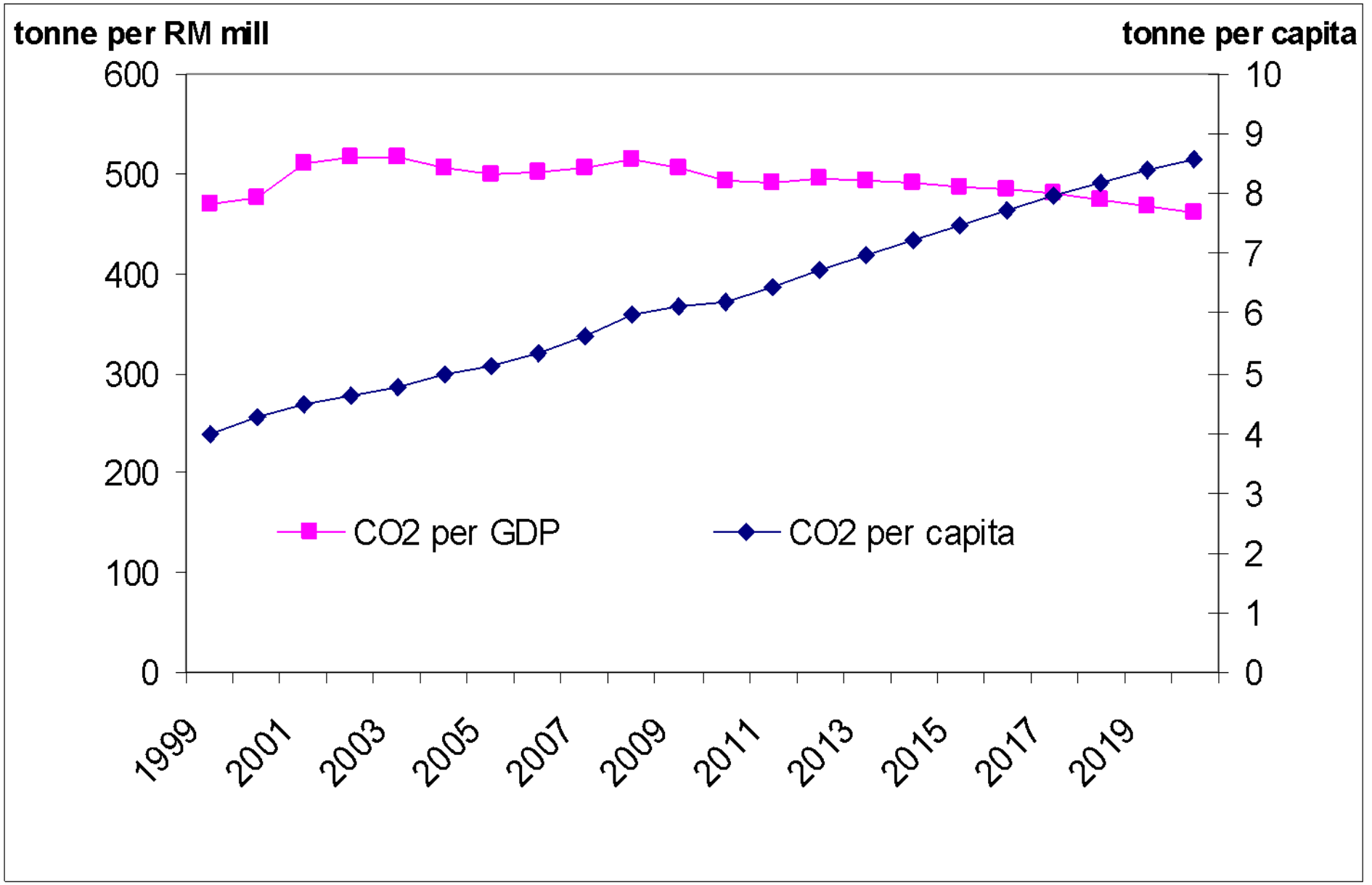
Energy intensities for Malaysia 1999-2020



Net imports and self-sufficiency - here defined as (indigenous production) / (indigenous production + imports).



Global Warming Potential (GWP) intensities.



LEAP reference scenario examples

- New GDP assumptions: sectoral disaggregation
- Transport sector: road transport – air sea rail
- Road transport: passenger – freight
- Passenger: vehicle mileage
- vehicle fuel economy

LEAP GDP assumptions

- Disaggregated growth assumptions
- Example increase in service sector growth to 8% annually using excel file

- Exercise: Moderate growth: reduce growth rates for manufacturing in total to 4% from 2010 and services to 5% (use excel file)

LEAP fuel economy

- Disaggregated transport sectors
- Example: adjusting basic parameters for cars

- Exercise: Increase fuel economy by 5% in 2010 for cars of all types

LEAP mileage

- What is the interpretation of mileage

- Example: Use a new scenario to compare results - reduce mileage for cars in 2010 and onwards by 10%
- Exercise: Reduce mileage gradually to 16000 km in 2020 and only 18000 for diesel

LEAP scenario

- Construct a scenario containing the elements:
- Increase the gas extraction of peninsular Malaysia from 2012 with 25%
- Assume additional hydro capacity in PM and build a new hydro plant in 2015
- Introduce hybrid cars on gasoline and electricity: assume fixed fuel shares e:25%
- Standards reduce specific consumption for ac by 25% gradually from 2005 to 2020